POLARIZING PLATE, METHOD FOR MANUFACTURING POLARIZING PLATE AND LIQUID CRYSTAL DISPLAY DEVICE

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Abstract of **JP 2003172822 (A)**

PROBLEM TO BE SOLVED: To provide a high-performance, inexpensive and long polarizing plate composed of an obliquely stretched polarizing film which can improve the yield in the process of punching the polarizing plate and to provide a method for manufacturing the polarizing plate and a liquid crystal display device which uses the above polarizing plate. ; SOLUTION: The long polarizing plate has at least a polarizing film comprising a polyvinylalcohol polymer and has such properties that (a) the absorption axis of the polarizing film is neither parallel nor perpendicular to the longitudinal direction, (b) the retardation of the polarizing film in the source web is >=400 nm and <=2,000 nm, (c) the polarizing degree is >=80% at 550 nm wavelength and (d) the transmittance as a single plate is >=35% at 550 nm. A method for manufacturing the above polarizing plate and a liquid crystal display device which uses the above polarizing plate are also disclosed. ; COPYRIGHT: (C)2003,JPO

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(54)【発明の名称】　偏光板、偏光板の製造方法および液晶表示装置

(57)【要約】
【課題】偏光板打ち抜き工程で得率が向上することを可能にする斜め延伸した偏光膜から構成され、高性能で安価な長尺の偏光板、この偏光板の製造方法およびこの偏光板を用いた液晶表示装置を提供する。
【解決手段】ポリビニルアルコール系ポリマーを含んで構成されている偏光膜を少なくとも有する長尺の偏光板であって、（ａ）偏光膜の吸収軸が長手方向に平行でも垂直でもなく、（ｂ）偏光膜の原反レターデーションが４００ｎｍ以上２０００ｎｍ以下であり、（ｃ）偏光度が５５０ｎｍで８０％以上であり、そして（ｄ）単板透過率が５５０ｎｍで３５％以上である偏光板、この偏光板の製造方法、およびこの偏光板を用いる液晶表示装置。

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[0019]

Although the thickness of the film before being stretched is not limited to any specific value, it is preferably in the range of 1 μm to 1 mm and particularly preferably in the range of 20 to 200 μm in terms of holding stability and stretching homogeneity of the film.

[0037]

<Distribution of contained volatile components>

In case of manufacturing a long, particularly roll shaped polarizing plate in a consistent process, it is necessary that there is no uneven or missing dyed portion in the manufactured polarizing plate. If there is uneven distribution of volatile components in a film before being stretched (i.e. if the volatile content in the film before being stretched varies depending on different locations thereof), it causes an uneven or missing dyed portion. Therefore, it is preferred that the volatile content distribution in the film

before being stretched is small and specifically equal to or less than 5%. The distribution of volatile components represents a fluctuating range of the volatile content rate defined above per 1 m^2 of the film (i.e. the ratio between the average volatile content rate and the difference between the maximum value and the average volatile content rate or the difference between the minimum value and the average volatile content rate, whichever is greater.) Examples of a method for reducing the volatile content distribution include a method of uniformly air blowing both front and back surfaces of the film, a method of uniformly squeezing it using a nip roller, a method of wiping it with a wiper, blade or sponge and the like. However, any method may be used as long as it can achieve uniform distribution of volatile components. Examples are shown in Figs.10 to 12.

[0065]

The dried point was on one third from the beginning of the c zone, the water content of the PVA film was 32% before being stretched and 1.5% after being dried. The difference in conveying speed between left and right tentering clips was less than 0.05% and the angle between the centerline of the film inserted into the tentering machine and the centerline of the film to be sent to the next process was 46°. In this regard, |L1-L2| was 0.7 m and W was 0.7 m, which means that there was a relationship of |L1-L2|=W. The substantial stretching direction Ax-Cx in the tentering exit was angled at 45° with respect to the centerline 22 of the film to be sent to the next process. There was no wrinkle or deformation observed in the film in the tentering exit. The absorption axis direction of the obtained polarizing

plate was angled at 45° with respect to the longitudinal direction. In this polarizing plate, the transmittance was 42.3% and the polarization degree was 99.89% at 5400 nm. The retardation of the original PVA film in the second embodiment was 1270 nm. Further, when the polarizing plate was cut into the size of 310 × 233 mm as shown in Fig.8, it was possible to obtain the polarizing plate whose absorption axis was angled at 45° with respect to its sides at area efficiency of 91.5%.